

THE BLOCK-ABLATOR-IN-A-HONEYCOMB HEAT SHIELD ARCHITECTURE OVERVIEW (IPPW-7)

PETER ZELL*, ETHIRAJ VENKATAPATHY AND JAMES ARNOLD

NASA Ames Research Center
e-mail: *Peter.T.Zell@NASA.gov*

ABSTRACT

An atmospheric-entry heat shield architecture is presented that employs cured ablator blocks bonded into a structural honeycomb lattice. This architectural approach provides the flexibility to tailor the distribution of thermal protection materials; both, over the surface area of the vehicle, and at depth. This approach may provide higher atmospheric entry reliability due to the structural attachment integrity provided by the honeycomb lattice in the ablative material layer. The architecture is described using the NASA Orion Crew Module's 5.0m diameter heat shield configuration as an example case. In general, this architecture has broad potential application for future missions that involve large-vehicle entries into planetary atmospheres.